

## Final Evaluation Report

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Your Details	
Full Name	Heriniaina Rio
Project Title	Impacts of Edge effects on lemur communities in Madagascar's eastern rainforests
Application ID	22135-1
Grant Amount	£5000
Email Address	<a href="mailto:rioheriniaina@gmail.com">rioheriniaina@gmail.com</a>
Date of this Report	31/03/2020

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Estimate population density of lemur's community in Iofa, fragmented forest				The number of individuals observed for each species was less than 80. We cannot use Distance to estimate the density. As an alternative for the analysis, we used encounter rate.
Assess the vegetation structure				The interior forest had higher rates of plant species richness and abundance compared with the middle and forest edges. Moreover, at the forest edge, I found that trees (for those >10cm in diameter at breast height) were smaller size and shorter compared with the trees at forest interior.
Camera trapping				Some camera trap did not capture animals.
Lemur species preference or avoidance to the edge				Two lemur species represent a pattern which indicate their preference to edge and interior forest.

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled.

The data collection had been difficult by the beginning of the rainy season (in March 2017) since the area is particularly wet. As a consequence, the increasing of water level in rivers nearby the research camp created problems in reaching the observation areas.

The second issue was the impact of cyclone Enawo on Iofa in March 2017. Around 50 people died. We had to stop the activity because of the level of water was very high (5 – 6 m). All the teams were evacuated in Moramanga and Andasibe for their safety. To tackle these problems, I needed to reschedule the data collection in the field.

3. Briefly describe the three most important outcomes of your project.

In this fragmented forest, twelve species of lemurs were observed during the fieldwork. Six nocturnal species (*Avahi laniger*, *Cheirogaleus major*, *Lepilemur microdon*, *Lepilemur mustelinus*, *Microcebus lehilahytsara*, and *Microcebus rufus*) and six diurnal species (*Eulemur fulvus fulvus*, *Eulemur rubriventer*, *Hapalemur griseus*)

*griseus*, *Indri indri*, *Propithecus diadema diadema*, and *Varecia variegata variegata*) were sighted during surveys. Three of these species found in Iofa are critically endangered which are *Indri indri*, *Propithecus diadema diadema* and *Varecia variegata variegata*). This finding is highly important for the conservation in Madagascar. In addition, we found evidence that indicated that significant differences are found in forest composition and structure across transect gradient. This second finding is important for managers, NGOs, conservationists to understand the relationship between forest ecology and the distribution of lemurs.

**4. Briefly describe the involvement of local communities and how they have benefitted from the project.**

The local community was greatly involved in the project by providing help from the beginning of the project until the end. They provided help with selection, sampling and data collection in the fieldwork.

The local community have benefited from short-term employment which was significant for them. Additionally, the project increased the capacity building of local community because they have learned about local ecosystems, lemur species, methods and the importance for the conservation of lemurs. They became aware of the conservation status of the lemurs and the forests. Most of the local community were not aware that Madagascar, especially this study site, is experiencing an ecological crisis due to the speed of fragmentation or that most of Malagasy flora and fauna is endemic to the island and makes it a unique place on the earth. So, I talked and explained to the local community why we need to conserve the remaining forest in this area.

**5. Are there any plans to continue this work?**

Based on the findings, we need more data to carry out the analysis and the next fieldwork is planned for the middle of 2020, subject to funding. I will add more sites and more time effort in the fieldwork. The next project will also focus on expanding the site study by including protected areas so I can compare if there is difference between protected areas and fragmented forest. Further to this, a restoration project is important in Iofa and in the surrounding areas, I plan to include a restoration activity in the next project.

**6. How do you plan to share the results of your work with others?**

This study is part of my master's degree that I was submitted at the University of Roehampton. I gave a presentation at the University of Antananarivo, Madagascar about my finding and I aim to publish a paper on the topic.

**7. Timescale: Over what period was the grant used? How does this compare to the anticipated or actual length of the project?**

The grant was used over a period of 12 months (March 2017-March 2018) which corresponds with the original plans.

8. Budget: Provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Foods	1530	1570	+40	
Flight from/to U.K-Madagascar	600	500	-100	The price of flights was booked earlier
per-diem field assistant	750	750		
camera traps	500	500		
Research fees	128	130	+2	I need to post some document from Moramanga to Antananarivo
Local transport for a year	257	318	+61	The car hire was high than I anticipated and during the cyclone, we need to go out from the forest, this is an addition trip
tent	347	347		
research permit	30	27	-3	
kitchen equipment	29	35	+6	We need extra pots and spoons for the team
Per diem cook	156	156		
per-diem local guide	673	673		
<b>Total</b>	<b>5000</b>	<b>5006</b>	<b>-6</b>	

9. Looking ahead, what do you feel are the important next steps?

The most important steps are to investigate the potential creation of community-based management in the site for future protected area. Additional data on species density are crucial to convince the government and conservationists to consider this area. It is also important to explore more sites in the surrounding areas to have robust data. I also aim to conduct a restoration project due the high level of fragmentation of this site. It seems that research is not enough to save high number of lemur species that we have found in Iofa. We have to work more and develop the local community livelihoods such as through a restoration programme. Finally, raising awareness is important to be considered as well in this site to increase the level of knowledge of local community in this area.

**10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?**

I have used the logo in at Ecole Normale Superieure, University of Antananarivo, Madagascar.

**11. Please provide a full list of all the members of your team and briefly what was their role in the project.**

**Heriniaina Rio:** Principal investigator

**Rindra Harilanto:** student from the University of Antananarivo

**Tovonirina:** local guide

**Heritiana Razakason:** local guide

**Mamitiana Solofoson:** local guide

**Nantenaina Ratoarison:** local guide

**12. Any other comments?**

I would like to thank the Rufford Foundation for providing financial support for this project. Without your help I would not be able to conduct this study which brought really valuable results about the impact of fragmentation of lemur communities in Madagascar. Below are some photos during the fieldwork for illustration.



Figure 1: Forest fragmentation in Ilofa



Figure 2: Estimating the distance from transect to the lemurs observed



Figure 3: Camera trap set up in the middle of transect



Figure 4: Mouse lemur (*Microcebus rufus*) spotted during the fieldwork



Figure 5: Local guide tagged a plant species

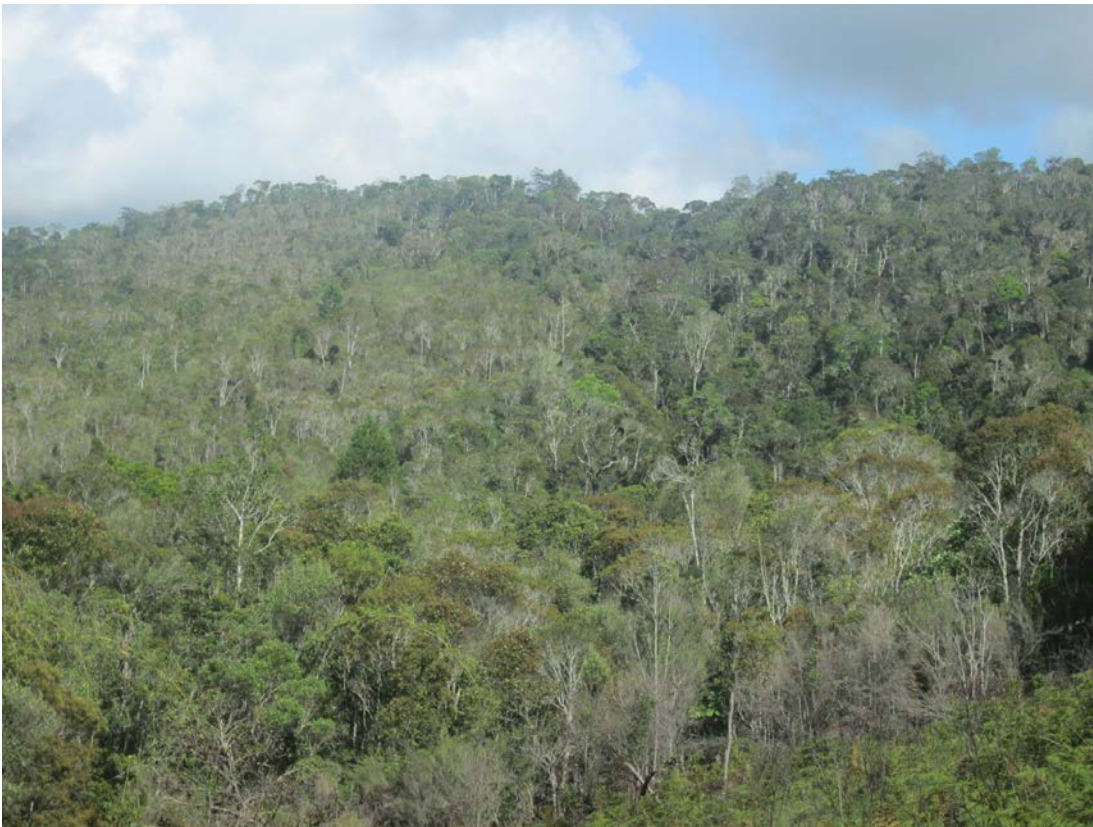


Figure 6: Iofa forest from the point of view





Figure 7: Local guides and the grantee during the fieldwork



Figure 8: Impact of cyclone Enawo in Iofa